

# 3D PRINTING JUNIOR LEVEL

3D printing is revolutionizing agriculture by enhancing productivity, sustainability, and efficiency. Here are some key applications and benefits:

**Prototyping and Production:** Farmers can quickly create custom tools and parts, reducing downtime and repair costs.

**Cost-Effective Production:** Small-scale or niche tools can be produced affordably to meet unique farming needs.

**Models and Demonstrations:** 3D printed models of crops, farm layouts, and equipment are useful for education, helping farmers and students understand agricultural practices and technologies.

## Problem Statement:

The problem statement for young participants is to design and create useful equipment or objects for agriculture using 3D printing technology. Use your creativity and knowledge to solve agricultural problems. Each level will provide a specific design statement for you to follow and design a 3D model.

## PRELIMINARY LEVEL

### Task:

- Create a unique 3D model of a flowerpot with dimensions less than or equal to 10 x 10 x 10 cm (L x B x H) using 3D design software such as Tinker CAD, 123D Design, etc.

### Submission Requirements:

- Submit a video or timelapse video (max 2 minutes) showcasing the 3D design of flowerpot, describing the design process.
- In the video, participants should mention their names, school name, and location.
- Export and submit 3D design file in '.stl', '.obj', or '.3mf' format. The file must not be more than 25 MB.
- Upload the video to a specified platform (e.g., YouTube, Google Drive) and share the link for review.
- Submit the video link & 3D file through email to [bharatteckleague@gmail.com](mailto:bharatteckleague@gmail.com).

## ZONAL LEVEL

### Competition:

- Create a detailed 3D model of a **self-watering pot** using CAD-based software such as 123D, Fusion 360, AutoCAD, CATIA, etc (offline CAD software only).
- Export the design files in '.stl', '.obj', or '.3mf' format and should submit to the coordinator.
- Detailed dimensions and part descriptions will be provided during the competition.

### Criteria:

- Participants must bring their own laptops along with offline CAD software installed. Internet access will not be provided or permitted in the competition.
- Each team can submit 1 or 2 design models within the 3-hour time limit.
- The self-watering pot model for the zonal level competition should differ from the design created at the preliminary level.

### Performance Judging:

Designs will be judged based on their uniqueness of model and total design time.

## FINAL LEVEL

### Competition:

- Create and 3D print a drip irrigation system incorporating a water bottle in real-time. The design must be watertight, user-friendly, printable in less time.
- Participants will have maximum 2 hours for designing and an additional 2 hours for 3D printing, totally a 4-hour competition.
- Detailed dimensions and part descriptions will be provided during the competition.

### Criteria:

- Participants must bring their own laptops along with offline CAD software installed. Internet access will not be provided or permitted in the competition.

### Performance Judging:

- Designs will be judged based on their quality, including how they look, how well they function, and the time taken to design, slicing, and 3D print the model.